PLAY & LEARN

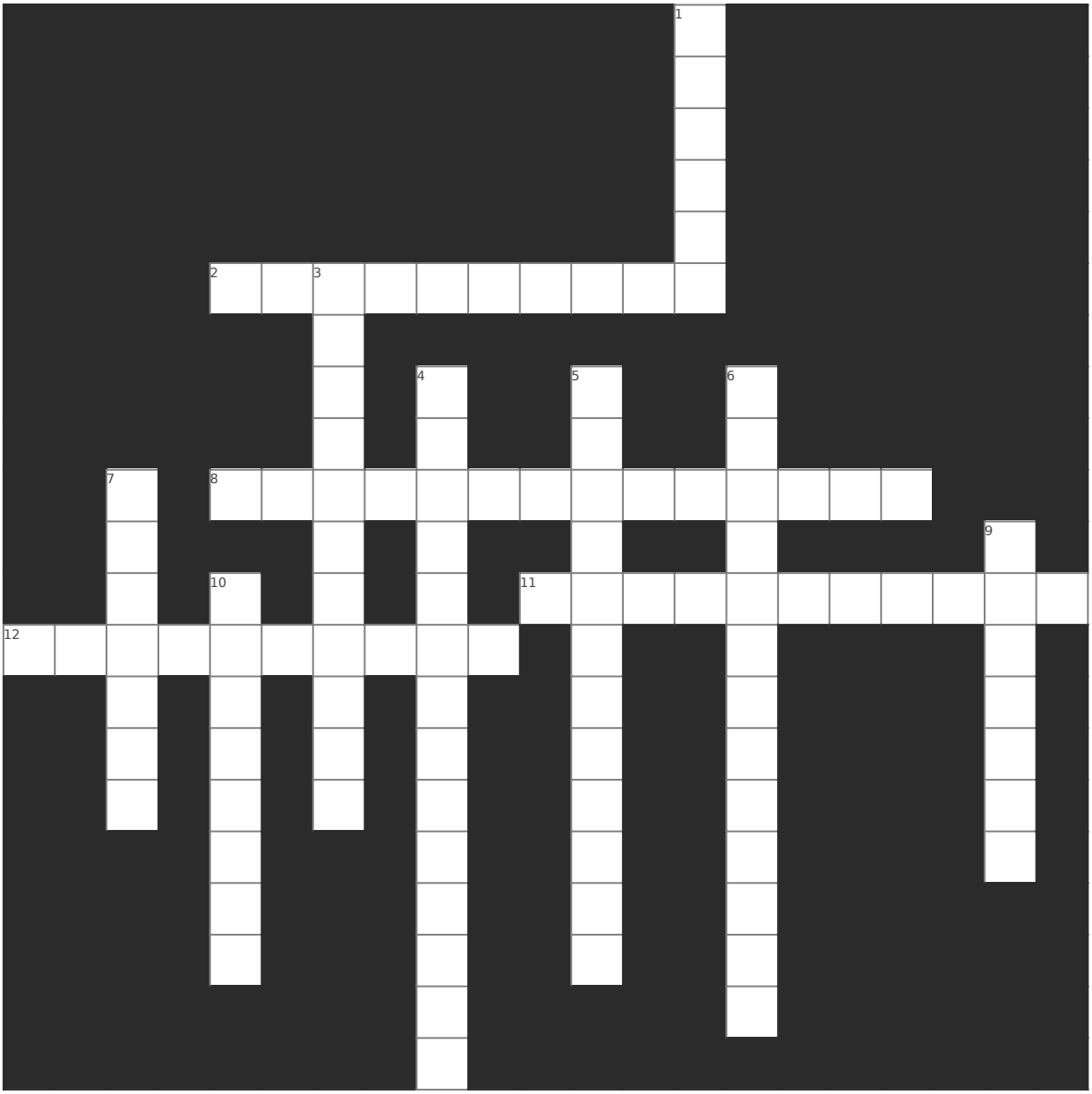
A puzzle workbook — crosswords, word searches, scrambles and quiz games

Print it. Solve it. Race a friend. Answer keys are at the back — no peeking.

#	Puzzle	Play it	Time
1	The Crossword	Solo or pairs	15 min
2	Word Search	Solo — race the clock	10 min
3	Scrambled Terms	Solo	8 min
4	Odd One Out	Teams of 4	10 min
5	Chapter Scrabble	Groups of 3–4	20 min
6	Who Am I? — Clue Cards	Whole class	15 min
7	True or False Sprint	Whole class, standing	6 min
8	Bingo	Whole class	15 min
9	Two Truths and a Lie	Pairs	10 min
10	The Escape Challenge	Teams of 4	25 min

Puzzle 1 · The Crossword

Every answer is a word from this chapter. Fill the white squares — one letter per square.



ACROSS

2. ____ effect — trapping of heat by atmospheric gases (10)

8. plants converting sunlight into chemical energy (14)

11. the process releasing energy from food, using oxygen (11)

12. burning that releases carbon dioxide (10)

DOWN

1. land and sea ____ — daily coastal wind patterns (6)

3. liquid water turning into water vapour (11)

4. ____ cycle — nutrient cycling through living and non-living systems (14)

5. water vapour turning back into liquid water (12)

6. water falling from clouds as rain, snow or hail (13)

7. global ____ — rising average temperatures (7)
9. seasonal wind pattern bringing rain to India (7)
10. ocean ____ — large-scale movements of seawater (8)

Puzzle 2 · Word Search

15 terms are hiding in the grid — across, down, diagonally, and backwards. Circle each one, then tick it off the list. Beat 10 minutes and you win.

R	S	S	Z	N	O	B	R	A	C	V	Z	J	P	S
N	O	I	T	A	R	I	P	S	E	R	E	J	R	X
F	I	S	X	C	R	K	V	G	L	Z	S	M	E	N
A	I	E	L	R	L	H	C	T	Z	Z	U	O	C	J
B	K	H	P	E	A	I	W	Y	O	A	O	N	I	P
O	J	T	Q	I	Q	O	M	I	C	J	H	S	P	V
X	Z	N	E	H	U	G	Q	A	N	L	N	O	I	G
Y	S	Y	O	C	E	A	N	I	T	D	E	O	T	K
G	L	S	G	Y	Q	C	G	J	J	E	E	N	A	O
E	V	O	R	I	H	W	F	T	D	U	R	V	T	W
N	B	T	W	G	R	B	S	M	F	X	G	A	I	U
T	Z	O	C	O	N	D	E	N	S	A	T	I	O	N
J	V	H	N	O	I	T	S	U	B	M	O	C	N	I
R	K	P	R	G	A	T	M	O	S	P	H	E	R	E
K	N	O	I	T	A	R	O	P	A	V	E	V	R	R

☐ PHOTOSYNTHESIS	☐ PRECIPITATION	☐ CONDENSATION
☐ EVAPORATION	☐ RESPIRATION	☐ GREENHOUSE
☐ COMBUSTION	☐ ATMOSPHERE	☐ MONSOON
☐ CLIMATE	☐ CARBON	☐ OXYGEN
☐ CYCLE	☐ OCEAN	☐ WIND

Race Rules

- **Solo:** find all the words. Note your time at the top of the page.
- **Pairs:** one partner finds across-and-down words, the other finds diagonals. First pair to complete the list wins.
- **Hard mode:** cover the word list. Find as many chapter terms as you can in 5 minutes.
- **Champion move:** for every word you find, say what it means out loud. No meaning, no point.

Puzzle 3 · Scrambled Terms

Every row is a chapter word with its letters shuffled. Unscramble it. The clue in brackets is your lifeline — try to solve without it first.

#	Scrambled letters	Clue	Your answer
1	E R I I P O N P I A T C T	(rain, snow or hail falling from clouds)	_____
2	Y S H N I T P E S S O O T H	(plants making food using sunlight)	_____
3	I M G O C I O C E A H B E L	(cycle linking living and non-living systems)	_____
4	G R O E S H N U E E	(____ effect — heat trapped by atmospheric gases)	_____
5	O T R I N E A O A P V	(liquid water becoming vapour)	_____
6	T S O O A N E D N I N C	(water vapour becoming liquid again)	_____
7	O N T B M U S I C O	(burning that releases carbon dioxide)	_____
8	E R H O M S T E P A	(the layer of gases surrounding Earth)	_____

Make It a Game

Beat the Bell: the teacher sets a 60-second timer. Every unscrambled word inside the bell = 1 point; a word you can also *define* = 3 points.

Chain Scramble: in a circle, each student scrambles a chapter word for the person on their left. Miss it and you are out. Last student standing wins.

Puzzle 4 · Odd One Out

Three belong together. One does not. Circle the odd one — then write why in one line. The "why" is where the marks are.

#	Which is the odd one out?	Because…
1	Evaporation · Condensation · Precipitation · Valency	_____
2	Photosynthesis · Respiration · Combustion · Osmosis (carbon cycle steps)	_____
3	Trade winds · Monsoon · Land breeze · Tendon	_____
4	Carbon cycle · Water cycle · Nitrogen cycle · Bicycle	_____
5	Ocean currents · Wind belts · Greenhouse effect · Torque	_____
6	Global warming · Greenhouse effect · Climate change · Sublimation	_____

Puzzle 5 · Chapter Scrabble

Play in groups of 3–4. You have one shared rack of letter tiles. Build only terms from this chapter — no ordinary English words allowed.

Your tile rack — cut these out or write them on paper squares:

A 1	**B** 3	**C** 3	**D** 2	**E** 1	**G** 2	**H** 4
I 1	**L** 1	**M** 3	**N** 1	**O** 1	**P** 3	**R** 1
S 1	**T** 1	**U** 1	**V** 4	**X** 8	**Y** 4	**Z** 10

Scoring:

You did this	Points
Each letter tile used	Its tile value
Word is a term from this chapter	× 2
Word is 8 letters or longer	+ 10 bonus
You can state its meaning correctly	+ 5
You can connect it to a real-life example	+ 3
Word is *not* in this chapter (challenged and lost)	− 5

How a Round Works

1. Player builds a word from the rack and lays it down.
2. Any opponent may **challenge** within 10 seconds: "That's not in this chapter."
3. Open the textbook. If the challenger is right, the word is removed and the builder loses 5 points. If the challenger is wrong, the *challenger* loses 5 points.
4. Builder states the meaning to claim the +5 bonus. The group votes on whether it was correct.
5. Play 6 rounds. Highest total wins.

Target Words (worth the most — do not show your opponents)

PHOTOSYNTHESIS · PRECIPITATION · BIOGEOCHEMICAL · CONDENSATION · EVAPORATION · GREENHOUSE · ATMOSPHERE · COMBUSTION

Puzzle 6 · Who Am I? — Clue Cards

Cut along the lines. One student draws a card and reads only the first clue aloud; the class guesses. Wrong guess? Read clue 2. Fewer clues used = more points.

CARD 1 ① I turn liquid water into vapour. ② The sun's heat drives me. ③ I am evaporation.	**CARD 2** ① I turn water vapour back into liquid. ② I form clouds. ③ I am condensation.
CARD 3 ① I am rain, snow or hail falling from clouds. ② I complete the water cycle. ③ I am precipitation.	**CARD 4** ① I trap heat in Earth's atmosphere. ② Without me, Earth would be far colder. ③ I am the greenhouse effect.
CARD 5 ① I let plants convert sunlight into chemical energy. ② I release oxygen as a by-product. ③ I am photosynthesis.	**CARD 6** ① I release energy from food using oxygen. ② You do me every second, even now. ③ I am respiration.
CARD 7 ① I am burning that releases carbon dioxide. ② Fossil fuels do me when used for energy. ③ I am combustion.	**CARD 8** ① I am a seasonal wind pattern bringing rain to India. ② Farmers depend heavily on me. ③ I am the monsoon.
CARD 9 ① I am the large-scale movement of seawater. ② I help distribute heat around the globe. ③ I am an ocean current.	**CARD 10** ① I am the rising of Earth's average temperature. ② Human activity is accelerating me. ③ I am global warming.
CARD 11 ① I link living and non-living systems in a cycle. ② The carbon cycle is an example of me. ③ I am a biogeochemical cycle.	

Scoring: guessed after clue ① = **5 points** · after ② = **3 points** · after ③ = **1 point**

Puzzle 7 · True or False Sprint

Everyone stands. Teacher reads a statement. True → stay standing. False → sit down. Get it wrong and you are out. Last student standing wins.

#	Statement	Your call
1	Evaporation turns liquid water into vapour.	☐ True ☐ False
2	Condensation turns vapour into liquid water.	☐ True ☐ False
3	Precipitation is the same thing as evaporation.	☐ True ☐ False
4	The greenhouse effect traps heat in the atmosphere.	☐ True ☐ False
5	Photosynthesis releases carbon dioxide as a by-product.	☐ True ☐ False
6	Photosynthesis releases oxygen as a by-product.	☐ True ☐ False
7	Respiration releases energy from food using oxygen.	☐ True ☐ False
8	Combustion of fossil fuels releases carbon dioxide.	☐ True ☐ False
9	The monsoon is a seasonal wind pattern important to India.	☐ True ☐ False
10	Ocean currents have no effect on global climate.	☐ True ☐ False
11	Global warming refers to a rising average global temperature.	☐ True ☐ False
12	The water cycle and carbon cycle are both biogeochemical cycles.	☐ True ☐ False
13	Land and sea breezes occur due to differential heating of land and water.	☐ True ☐ False
14	The atmosphere plays no role in the greenhouse effect.	☐ True ☐ False

Puzzle 8 · Bingo

Each student fills the empty grid below with any 16 words from the word bank — in any order, one per box. The teacher then reads out meanings, not names. Cross a box only when its meaning is called. First to a full row, column or diagonal shouts BINGO.

Word bank — choose any 16:

Evaporation	Condensation	Precipitation	Greenhouse effect
Photosynthesis	Respiration	Combustion	Monsoon
Ocean current	Global warming	Biogeochemical cycle	Water cycle
Carbon cycle	Atmosphere	Land breeze	Sea breeze

Your bingo card:

> **Caller’s List (teacher only — read the meaning, never the name)**
> ① "I turn liquid water into vapour." ② "I turn water vapour back into liquid." ③ "I am rain, snow or hail falling from clouds." ④ "I trap heat in Earth's atmosphere." ⑤ "I let plants convert sunlight into chemical energy." ⑥ "I release energy from food using oxygen." ⑦ "I am burning that releases carbon dioxide." ⑧ "I am a seasonal wind pattern important to India." ⑨ "I am the large-scale movement of seawater." ⑩ "I am the rising of Earth's average temperature." □ "I link living and non-living systems together." □ "I blow from sea to land during the day."

Puzzle 9 · Two Truths and a Lie

Each set has three statements. Two are true, one is a lie. Circle the lie — and correct it in one line.

Set 1

(a) Evaporation is liquid becoming vapour.
(b) Condensation is liquid becoming vapour.
(c) Condensation is vapour becoming liquid.

The lie is _____ . Corrected: _____

Set 2

(a) Photosynthesis releases oxygen.
(b) Photosynthesis releases carbon dioxide.
(c) Respiration uses oxygen.

The lie is _____ . Corrected: _____

Set 3

(a) The greenhouse effect is entirely harmful.
(b) The greenhouse effect keeps Earth warm enough for life.
(c) Excess greenhouse gases cause global warming.

The lie is _____ . Corrected: _____

Set 4

(a) The monsoon is important for Indian agriculture.
(b) Ocean currents have no effect on climate.
(c) Ocean currents help distribute heat globally.

The lie is _____ . Corrected: _____

Puzzle 10 · The Escape Challenge

Solve all five gates. Each gives you one digit. Collect all five to unlock the exit code.

🔒 GATE 1 — The Water Cycle Gate

How many main steps are named in the water cycle (evaporation, condensation, precipitation)? Use that number.

Digit: ☐

🔒 GATE 2 — The Carbon Gate

How many carbon-cycle processes are named (photosynthesis, respiration, combustion)? Use that number.

Digit: ☐

🔒 GATE 3 — The Wind Gate

How many wind/breeze patterns are named (monsoon, land breeze, sea breeze)? Use that number.

Digit: ☐

🔒 GATE 4 — The Greenhouse Gate

Count the letters in GREENHOUSE, take the first digit.

Digit: ☐

🔒 GATE 5 — The Cycle Gate

How many biogeochemical cycles are named in this chapter (water, carbon)? Use that number.

Digit: ☐

EXIT CODE: ☐ ☐ ☐ ☐ ☐

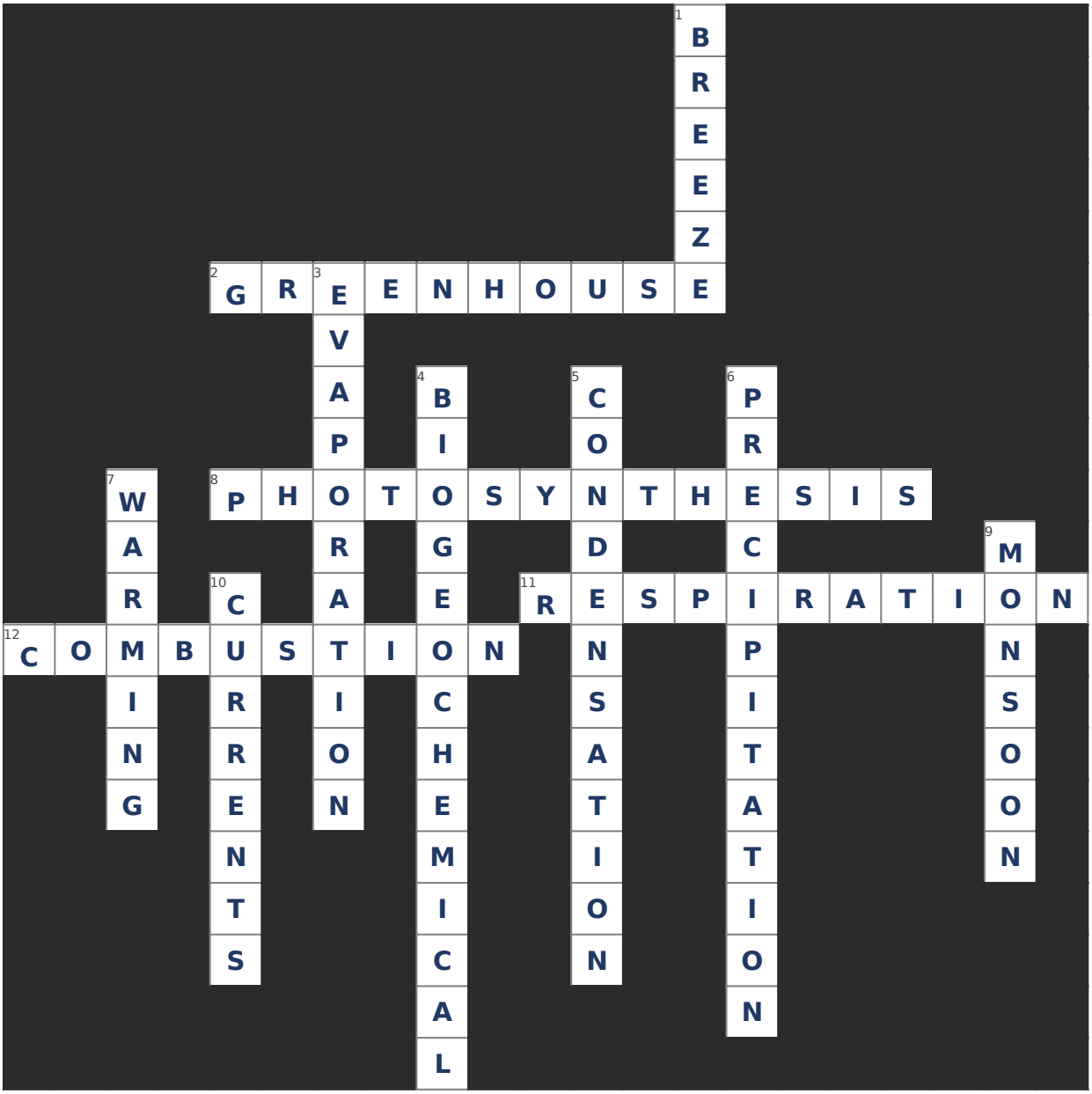
🔒 Teacher's note

Hide the gate cards around the classroom. Teams rotate every 4 minutes. First team to reach the door with the correct code escapes. Losing teams try again next period.

🔑 Answer Keys

Teachers and self-checkers only. Solve first — the puzzle is the point.

Puzzle 1 · Crossword — Solved Grid


1 B R E E Z
2 G R 3 E E N H O U S E
V A P
4 B I G
5 C O N D E N S A T I O N
6 P R E C I P I T A T I O N
7 W A R M I N G
8 P H O T O S Y N T H E S I S
9 M O N S O O N
10 C U R R E N T S
11 R E S P I R A T I O N
12 C O M B U S T I O N

Across: 2 GREENHOUSE · 8 PHOTOSYNTHESIS · 11 RESPIRATION · 12 COMBUSTION

Down: 1 BREEZE · 3 EVAPORATION · 4 BIOGEOCHEMICAL · 5 CONDENSATION · 6 PRECIPITATION · 7 WARMING · 9 MONSOON · 10 CURRENTS

Puzzle 2 · Word Search — Solved Grid

R	S	**S**	Z	**N**	**O**	**B**	**R**	**A**	**C**	V	Z	J	**P**	S
N	**O**	**I**	**T**	**A**	**R**	**I**	**P**	**S**	**E**	**R**	**E**	J	**R**	X

F	I	S	X	C	R	K	V	G	L	Z	S	M	E	N
A	I	E	L	R	L	H	C	T	Z	Z	U	O	C	J
B	K	H	P	E	A	I	W	Y	O	A	O	N	I	P
O	J	T	Q	I	Q	O	M	I	C	J	H	S	P	V
X	Z	N	E	H	U	G	Q	A	N	L	N	O	I	G
Y	S	Y	O	C	E	A	N	I	T	D	E	O	T	K
G	L	S	G	Y	Q	C	G	J	J	E	E	N	A	O
E	V	O	R	I	H	W	F	T	D	U	R	V	T	W
N	B	T	W	G	R	B	S	M	F	X	G	A	I	U
T	Z	O	C	O	N	D	E	N	S	A	T	I	O	N
J	V	H	N	O	I	T	S	U	B	M	O	C	N	I
R	K	P	R	G	A	T	M	O	S	P	H	E	R	E
K	N	O	I	T	A	R	O	P	A	V	E	V	R	R

Puzzle 3 · Scrambled Terms

1. PRECIPITATION · 2. PHOTOSYNTHESIS · 3. BIOGEOCHEMICAL · 4. GREENHOUSE · 5. EVAPORATION · 6. CONDENSATION · 7. COMBUSTION · 8. ATMOSPHERE

Puzzle 4 · Odd One Out

#	Odd one	Because
1	Valency	evaporation, condensation and precipitation are all water-cycle steps; valency belongs to Chapter 9
2	Osmosis	photosynthesis, respiration and combustion are all carbon-cycle processes; osmosis belongs to Chapter 2
3	Tendon	trade winds, monsoon and land breeze are all wind patterns; tendon belongs to Chapter 3
4	Bicycle	carbon, water and nitrogen cycles are biogeochemical cycles; a bicycle is unrelated wordplay
5	Torque	ocean currents, wind belts and greenhouse effect are all Earth-systems concepts; torque belongs to Chapter 6
6	Sublimation	global warming, greenhouse effect and climate change are linked Earth-systems terms; sublimation belongs to Chapter 5

Puzzle 7 · True or False Sprint

1-T · 2-T · 3-F · 4-T · 5-F · 6-T · 7-T · 8-T · 9-T · 10-F · 11-T · 12-T · 13-T · 14-F

Puzzle 9 · Two Truths and a Lie

Set	The lie	Correction
1	b	Condensation is vapour turning back into liquid, the opposite of evaporation.
2	b	Photosynthesis releases oxygen as a by-product, not carbon dioxide — that is what it consumes.
3	a	The greenhouse effect is natural and necessary; the problem is an EXCESS of greenhouse gases.
4	b	Ocean currents significantly affect global climate by distributing heat.

Puzzle 10 · The Escape Challenge

EXIT CODE: 3 · 3 · 3 · 1 · 2

(Answer: 3) (Answer: 3) (Answer: 3) (Answer: 10 → 1) (Answer: 2)

Now go trace today's weather back to the water cycle step by step. □□